

A new *Cryptocoryne* species (Araceae) from southwestern Sri Lanka

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ABSTRACT

A new species, *Cryptocoryne srilankaensis*, from the southwestern part of Sri Lanka is described and illustrated and incorporated into an identification key to all Sri Lankan *Cryptocoryne* species. *Cryptocoryne srilankaensis* differs significantly from the other *Cryptocoryne* species by the spathe having a long tube and a white, short forward-bent limb, as well as by the leaves having a finely undulate margin.

Key words: Araceae, *Cryptocoryne*, new species, chromosome number, Sri Lanka.

INTRODUCTION

The *Cryptocoryne* of Sri Lanka are renowned for their decorative foliage and their use as aquarium plants. Since Trimen (1898) the species have been much studied: Alston (1931, 1938), Bastmeijer (2024), Bastmeijer et al. (1984, 2012), Bastmeijer & Ketner (1993), de Graaf & Arends (1986), Jacobsen (1976, 1987), Petch (1928), Rataj (1975), Wendt (1952–1958), and de Wit (1975, 1990). The last major taxonomic treatment was Jacobsen (1987) where nine species and a naturally occurring interspecific hybrid are recognised. Since then, one further new species, *C. waseri* Kettner was described from a plant cultivated in Europe, collected from Sri Lanka in 1990 (Bastmeijer et al. 2012); it is presumed the original populations were already extinct at the time of its description.

Sri Lankan *Cryptocoryne* fall into two well defined groups coinciding with their chromosome numbers, viz. a group with a chromosome number of $2n = 28$ including; *C. walkeri* Schott, *C. beckettii* Trim., *C. wendtii* de Wit, *C. undulata* Wendt, *C. ×willisii* Reitz, *C. parva* de Wit, and *C. nevillei* Hook.f., and a group with a chromosome number of $2n = 36$; *C. thwaitesii* Schott, *C. alba* de Wit, *C. bogneri* Rataj, and *C. waseri* Kettn. The species of the $2n = 28$ chromosome group are generally distributed in the central, north and eastern parts of the island covering a land area of $\frac{3}{4}$ part of the island, although some locations are also found extended a little towards the southwest. The species from the group with the chromosome number $2n = 36$ are recorded in the southwestern part of the island in the rainforests (Jacobsen 1976, 1977).

The spathes and leaves of the two chromosome groups are also different, i.e., in the $2n = 28$ group, leaves are \pm lanceolate and smooth; spathes usually have a long tube; absence of a tail in spathe limb and typically, a collar is found on the limb (opposed to \pm ovate, relatively rough leaves; spathes usually with a short tube; long tail in spathe limb and absence of a collar in the limb).

The species from the $2n = 28$ chromosome group are among the best suited for normal aquarium use and have over the years been exported to countries all over the world by commercial plant and fish exporters in Sri Lanka. The species from the $2n = 36$ chromosome group are known to be unsuited for aquarium use, often dying within a few weeks, and only skilled growers can maintain them over longer periods.

According to information provided by H. Chikamatsu (Wongso pers. com.) a *Cryptocoryne* was commercially imported to Japan in 2010 with fruiting material with viable seeds and has been circulating under the names of *C. "thwaitesii"* and *C. "bogneri"* in the aquarium trade, with the main sources of information coming from Japanese aquarists. Although difficult to grow, the plant survived in the specialist collections of various aquarists in Japan, the United States, and Europe. Ishizu (2010) described the occurrence and habitat of this long, white tubed *Cryptocoryne* from around Matugama, Sri Lanka. The plant on which the type is based came from Mr. Saito, Japan, via Mr. Babics, Germany to Jan Bastmeijer in late August 2010 and who cultivated the accession (*B 1414*) for years, distributing vegetatively propagated material to, among others to Jacobsen and Wongso.

With the information gathered over the years from cultivation that the plant produces fruits and viable seeds, and the pollen is fertile indicates that it can be considered a species different from the known *Cryptocoryne* species of Sri Lanka as well as the world and not a hybrid (fertile pollen). Therefore, it was suggested to formally name the plant scientifically, as a continued circulation of the plants as 'unidentified' or under 'wrong names' would add to the confusion and would be detrimental to the study of the genus. Further, describing this undisclosed *Cryptocoryne* species would uplift the species diversity in Sri Lanka adding a new endemic member and initiating recovery plans and restoration.

Material and methods

The commercial samples from which the type was selected were cultivated in private collections in Emmen, The Netherlands, several places in Europe, and Surabaya, Indonesia. Vegetative and reproductive structures were monitored and recorded. Chromosome slides were prepared according to the protocol provided by Wongso et al.. (2017).

Results

The chromosome number of the new species was recorded as $2n = 36$, but in a morphological key, the $2n = 36$ group needs to be incorporated together with the Sri Lankan $2n = 28$ group.

Key to the Sri Lankan species of *Cryptocoryne*

- 1a. Spathe limb of with a 3–7 cm long tail 2
 1b. Spathe limb without a long tail 4

- 2a.** Spathe tube 2–4 cm long, limb upright later forward bent, not twisted; leaf blades with a rough surface, elliptic to ovate, margin entire, finely undulate but giving a denticulate appearance *C. thwaitesii*
- 2b.** Spathe tube 1–2 cm long, limb upright and usually with a forward twist, but not directly forward bent; leaf blades more or less smooth to slightly rough, lanceolate to narrowly ovate, margin entire, sometimes finely undulate **3**
- 3a.** Spathe limb surface rough with protuberances, dark red purple with a distinct collar *C. waseri*
- 3b.** Spathe limb surface smooth, white, occasionally pink or red, without a distinct collar *C. alba*
- 4a.** Spathe limb without a distinct collar, a collar zone may be present **5**
- 4b.** Spathe limb with a distinct collar **7**
- 5a.** Spathe limb whitish, becoming abruptly forward horizontally bent *C. srilankaensis*
- 5b.** Spathe limb yellow, upright, ± backwards or forward tilted **6**
- 6a.** Spathe limb suberect to backwards bent, surface smooth *C. walkeri*
- 6b.** Spathe limb suberect to forward bent, with a clear demarcation towards the rough to lateral–apical part *C. bogneri*
- 7a.** Spathe limb with a collar protruding 0.5–1 mm above the surface of the limb, black purple, throat distinctly black purple spotted *C. nevillei*
- 7b.** Spathe limb with a collar not protruding more than 0.3 mm above the surface of the limb, throat without black purple spots **8**
- 8a.** Collar green to yellow to brownish, approximately the same colour as the limb **9**
- 8b.** Collar brown to purple, usually of a darker colour than the limb (occasionally yellowish with a purple limb) **10**
- 9a.** Spathe limb yellow to greenish, more or less upright or recurved *C. walkeri*
- 9b.** Spathe limb ± yellowish to cream, sometimes brownish, ± forward obliquely twisted *C. undulata*
- 10a.** Collar brown to black purple, limb usually a lighter colour than the collar, with a smooth surface or sometime rough but not warty; leaves usually more than 1 cm broad, green to brown to red and with a prominent, often reddish venation on the lower surface **11**
- 10b.** Collar purple (occasionally yellowish and then with a purple limb); limb purple (rarely greenish and then with a purple collar), with a warty rough surface; leaves usually less than 1 cm broad, ± evenly green and without prominent venation **12**

- 11a. Limb suberect, twisted to recurved *C. beckettii*
 11b. Limb ± obliquely twisted, often into a rather long point *C. wendtii*
- 12a. Spathe usually more than 4 cm long; collar purple (occasionally yellowish and then with a purple limb); limb purple (rarely greenish and then with a purple collar), usually more than 1–1.5 cm long, suberect and twisted or somewhat recurved, only rarely obliquely twisted.....
 *C. xwillisii*
 12b. Spathe usually less than 3 cm long; collar purple, limb purple, usually less than 0.8 (–1.2) cm long, ± obliquely twisted..... *C. parva*

Cryptocoryne srilankaensis Yakand., Bastm., N.Jacobsen & Wongso, **sp. nov.** – Type: Cultivated specimen sampled 24 August 2020, *Bastmeijer B 1414* [original collection from Sri Lanka Matugama, received 21 August 2010 (holotype PDA, paratypes at PDA, BO, C & L). **Figures 1–4.**

Diagnosis: *Cryptocoryne srilankaensis* differs from *C. bogneri* by the long tube and the white, acute pointed, forward-bent spathe limb, *C. bogneri* having a short tube, a forward-curved yellow limb with a surface that is rough in the upper part and towards the margin. *Cryptocoryne srilankaensis* additionally differs from *C. thwaitesii* by the longer spathe tube and the shorter tail of the limb, *C. thwaitesii* has a distinctly shorter spathe tube, the spathe limb is usually ± purple spotted, and the limb has a long tail that usually bends forward later in anthesis. *Cryptocoryne srilankaensis* further differs from *C. alba* by the long tube and the forward bent spathe limb, *C. alba* having a short tube, a white to pink to red spathe limb that opens with a twist and the limb has a long upright tail. *Cryptocoryne srilankaensis* also differs from *C. waseri* by the long spathe tube and the white forward-bent spathe limb, *C. waseri* having a short tube, a red spathe limb that opens with a twist and the limb has a long upright tail.

Amphibious perennial herb less than 10 cm tall. Rhizome short, ca. 0.5 cm in diameter; stolons slender, mostly rather short and with short internodes. Leaves 10–15 in a rosette, 5–15 cm long, blade surface more or less smooth, broadly ovate, 2–3 cm broad, 4–6 cm long, shining to dull green to purple brown, some with distinct markings along main and secondary veins, green leaves with purple markings and purple brown leaves with green markings (Figure 3), apex acute, base subcordate, margin finely undulate with a thin brown line. Spathe 6–8 cm long, outside pale yellowish; kettle ca. 1 cm long, inside white, alveolae absent, flap white; tube ca. 6 cm long; limb narrowly ovate, ca. 0.7 cm broad and ca. 1.5 cm long, forward bent, inside yellow to crème coloured, throat whitish, lacking a collar zone, limb forward bent with a short tail. Spadix ca. 1 cm long; basal whorl of female flowers usually 4, about 2mm long, stigmas broadly ellipsoid; olfactory bodies irregularly rounded, yellowish; male flowers 25–35; appendix white. Syncarp not observed. Chromosome number $2n = 36$.

Etymology — Indicating the origin from Sri Lanka.

Distribution — Sri Lanka, southwestern rainforest; reported from only one locality at Matugama, Kaluthara District, Western Province (Ishizu 2010).



Figure 1: *Cryptocoryne srilankaensis*, emergent, cultivated specimen from type collection (B 1414). **A-C.** Habitus. **D** Spathe. **E** Leaf margin. Scale 1 cm. — Photos J.D. Bastmeijer

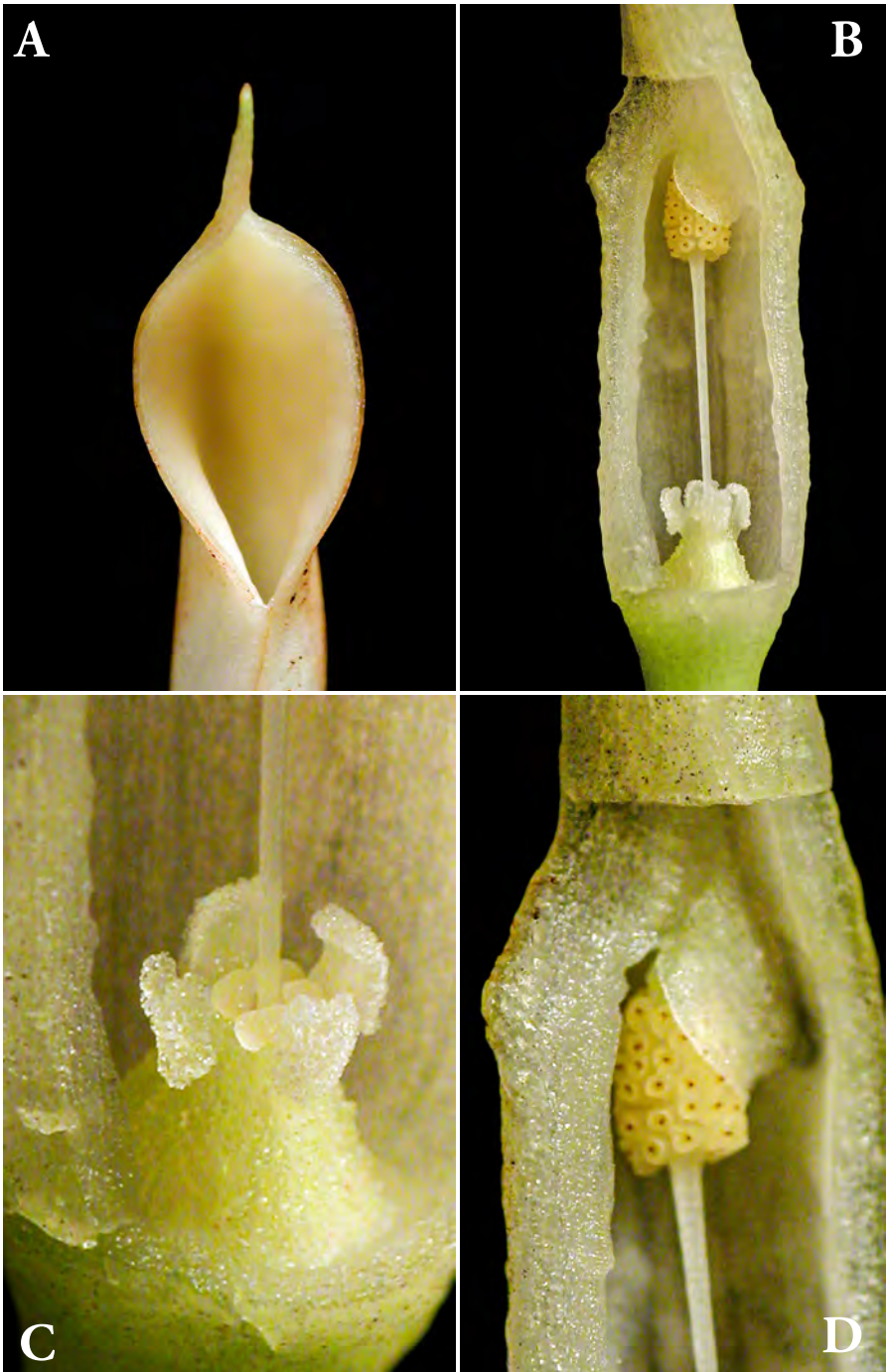


Figure 2: *Cryptocoryne srilankaensis*, spathe details from type collection (B 1414).
A. Spathe limb at the just opened stage. **B.** Cut open kettle showing female and male flowers. **C.** Female flowers at receptive stage with moist stigmas. **D.** Male flowers with immature male flowers. — Photos J.D. Bastmeijer.

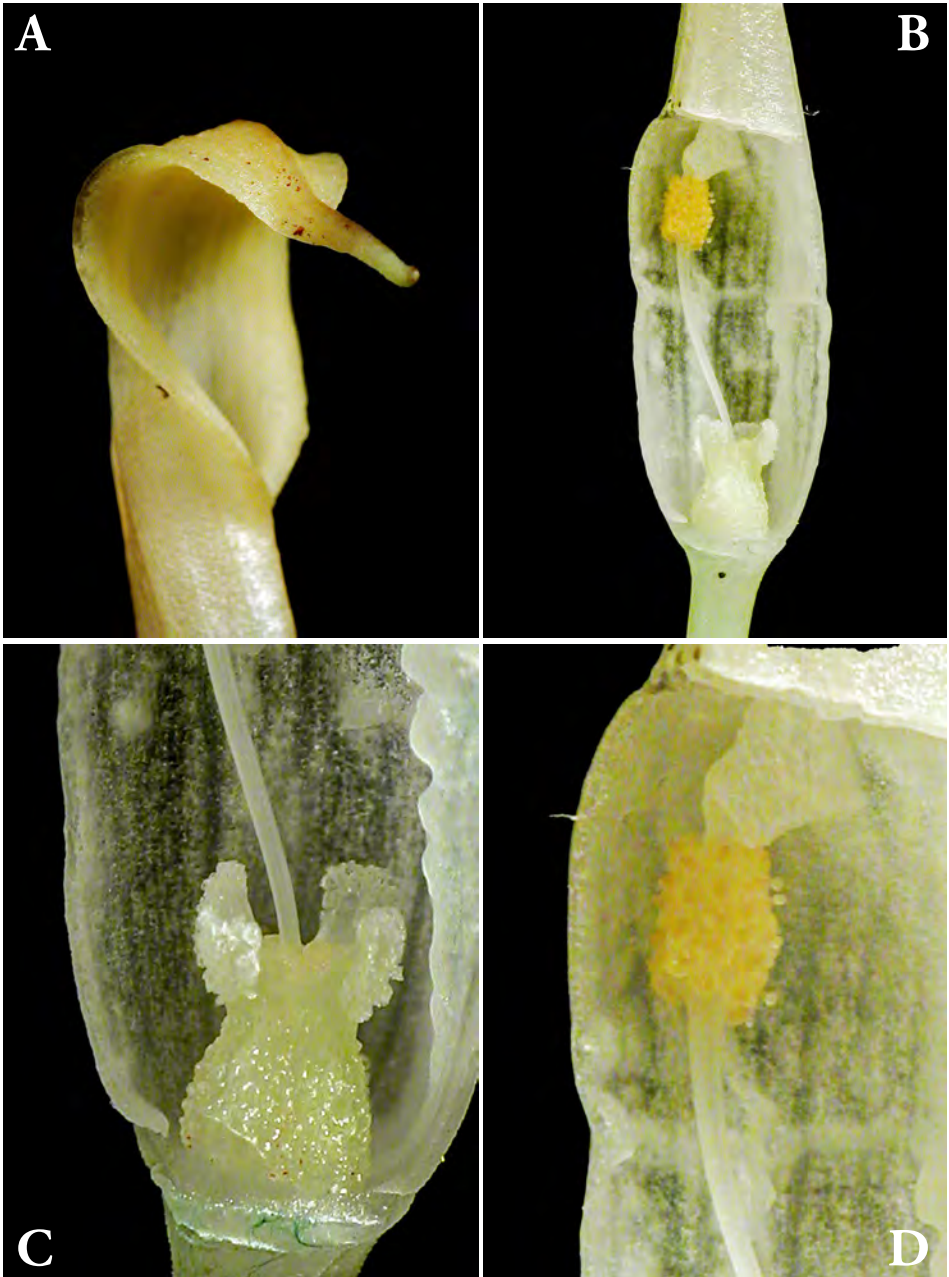


Figure 3: *Cryptocoryne srilankaensis*, spathe details from type collection (B 1414). **A.** Spathe limb at a later stage than in **Figure 2**. **B.** Cut open kettle showing female and male flowers. **C.** Female flowers at post receptive stage with dry stigmas. **D.** Male flowers at mature stage showing pollen droplets. Scale 1 cm. — Photos J.D. Bastmeijer.



Figure 4: *Cryptocoryne srilankaensis*. Emergent, cultivated specimen from type collection showing a spathe limb and variation in leaf colouration (B 1414). — Photo S. Wongso.

Habitat — Reported from a small stream with a gallery forest where it grows in mineral soil along the banks (Ishizu 2010).

Conservation status — *Cryptocoryne srilankaensis* has been recorded from a single locality, and it is therefore difficult to ascertain the conservation status according to IUCN (2024) categories and criteria, except that it is Data Deficient; more observations are needed to make a conservation assessment.

Cultivation — *C. srilankaensis* is difficult to maintain in the long term and is not suited for the aquarium. Our own experience with cultivation is that *C. srilankaensis* grows reasonably well half emergent in a leaf peat substrate, but it has not been stable in the long run.

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